REMARKS

Claims 2, 3, and 5 are pending in this application. Claims 2, 3, and 5 have been amended herewith. Claims 6-29 have been added as new claims. Applicant respectfully submits that no new matter has been added by way of these amendments. Support for these amendments can be found at least on pages 7-8 and 18-20.

None of Applicant's amendments herein shall be construed as dedicating any unclaimed, amended or cancelled subject matter to the public, and Applicant reserves the right to pursue such subject matter in this case or any related case.

Applicant elected Group II, Claims 2, 3, and 5, on July 26, 2001, and further elected SEQ ID NO: 6 within Group II, and species of antibody for compositions of Claims 3 and 5. Applicant has amended Claims 2, 3, and 5 to read only on SEQ ID NO: 6, as required by the Examiner.

Claim 2 is objected to for improperly reciting sequence identifiers. Claim 2 has been amended to recite the sequence identifier as "SEQ ID NO: 6." Applicant respectfully requests withdrawal of the objection.

Claims 2, 3, and 5 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant respectfully traverses the rejection.

Claim 2 has been amended to recite "an isolated polypeptide, comprising an amino acid sequence of SEQ ID NO: 6." Further, Claim 2 has been rewritten in independent form and therefore no longer depends from a claim that is withdrawn from examination. Applicant respectfully requests withdrawal of the rejection.

Claims 2, 3, and 5 stand rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant respectfully traverses the rejection.

The Examiner states that "[i]t is not clear from the specification the extent of the structural relationship between SEQ ID NO:1 and SEQ ID NO: 6. A sequence search of SEQ ID NO:6 against the pending U.S. application files does not show that SEQ ID NO: 6 has any relationship with SEQ ID NO:1 because the two sequences do not appear to overlap." The Examiner further argues that "the disclosure of NEM (which may be a protein having the sequence of SEQ ID NO:1) and the disclosure of SEQ ID NO:6 are not representative of a family of peptides that have structural similarities. Thus, it does not appear that the specification describes a genus of peptides having 'substantial homology' with SEQ ID NO:6."

Applicant has amended Claim 2 to recite "[a]n isolated polypeptide, comprising an amino acid sequence of SEQ ID NO: 6." Although Applicant disagrees with the Examiner's statements, Applicant respectfully submits that the rejection is moot in light of the amendment and requests withdrawal of the same.

Claim 2 stands rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter. Applicant respectfully traverses the rejection.

The Examiner argues that Claim 2 is directed to a peptide that is neither isolated nor purified, and thus, appears to encompass a product of nature. Claim 2 has been amended to recite, among other things, "[a]n isolated polypeptide" and therefore recites statutory subject matter. Applicant respectfully requests withdrawal of the rejection.

Claims 2, 3, and 5 stand rejected under 35 U.S.C. § 101 because the claimed invention is not supported by either a credible, substantial and specific asserted utility, or a well-established utility. Applicant respectfully traverses the rejection and requests withdrawal of the same.

The Examiner argues that "the specification fails to teach the exact structural relationship between 'NEM' and a peptide having the amino acid sequence of SEQ ID NO:6, or having structural homology to a sequence of SEQ ID NO:6. Thus, the teachings of the specification cannot be used to support a claim for any type of utility for peptides having an amino acid sequence of SEQ ID NO:6, or having substantial homology to SEQ ID NO:6."

The claimed invention is supported by a credible, substantial and specific asserted utility. Applicant isolated cDNA from prostate cancer cells. See p. 3, lines 30-31. The cDNA was then subcloned in a vector. See page 4, line 6. The plasmid containing NEM cDNA was then transfected in prostate cancer cell line PC-3M cells to produce the novel NEM polypeptide. See page 4, lines 6-9. Applicant, thus realized the utility of a polypeptide isolated from prostate cancer cells and used the expressed NEM polypeptide in several experiments to determine its particular utility.

Applicant notes in the specification that NEM may be utilized in the diagnosis of prostate cancer and in the determination of the grade of the prostate cancer. See "Summary of the Invention" p.4, lines 26-31, p.5, lines 13-17. Further, antibodies may be generated against NEM or its receptor to inhibit the growth and invasion of cancer. See "Summary of the Invention" p.4, lines 3-5, p. 5, lines 18-25. NEM may also be used as a prophylactic or therapeutic vaccine. See "Summary of the Invention" p.5, lines 26-30. Therefore, the specification provides specific utility for "NEM" in such a manner as to attribute the specific utility to the isolated cDNA and expressed polypeptide and not to any particular SEQ ID NO. Further, the specific utility is

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substantial in that the diagnosis and treatment of prostate cancer is a desirable outcome based upon a need in the art for better diagnosis and treatment of prostate cancer.

The specification further provides credible utility for the NEM polypeptide which may be characterized by the amino acid sequence of SEQ ID NO: 6 on page 8, lines 8-11, wherein Applicant states that "Peptide Sequence IDs 1, 6-8, 9-11, 12 are alternative sequences based on the cDNA Sequence IDs depending on the reading frame employed to translate the same."

Even the Examiner admits on p. 5 of the 10/02/2001 Office Action that "SEQ ID NO:6 appears to be a putative amino acid sequence derived from a putative reading frame of the cDNA sequence of SEQ ID NO:3, which is itself an alternate reading frame of SEQ ID NO:2." Therefore, although Applicant designated SEQ ID NO:1 as the amino acid sequence of NEM utilized in the experiments, the specification supports a credible, substantial and specific utility for any of the disclosed sequences, including SEQ ID NO:6.

In the Applicant's corresponding PCT case, the International Searching Authority cited the article "Evaluation and clinical value of neuroendocrine differentiation in human prostatic tumors" by Cussenot et al., which also provides evidence of the credible, substantial and specific utility of the present invention. A copy is attached to this response for the Examiner's review and will be provided in an Information Disclosure Statement to be subsequently filed by the Applicant.

The Examiner further states that her prior art search did not reveal structural evidence to support a claim to any function for a peptide having a sequence of SEQ ID NO:6 or having substantial homology to an amino acid sequence of SEQ ID NO:6. Applicant's search of SEQ ID NO:3, however, did reveal evidence to support its claim to a marker for prostate cancer, a copy of which is attached to this response. U.S. Patent No. 6,251,613 to Kishimoto, et al., for

example, discloses the nucleotide and amino acid sequence for GADII protein, a cancer specific protein. Further, Applicants isolated the cDNA of a **novel** protein, which may not necessarily correspond with already identified proteins.

Claims 2, 3, and 5 stand rejected under 35 U.S.C. § 112, first paragraph, since the claimed invention is not supported by either a credible, substantial and specific asserted utility or a well established utility, one skilled in the art would not know how to use the claimed invention. Applicant respectfully traverses the rejection and requests withdrawal of the same.

The Examiner argues that the "specification provides no guidance for the use of a peptide that consists or comprises an amino acid sequence of SEQ ID NO:6, because all of the experimental examples appear to apply to a protein having the amino acid sequence of SEQ ID NO:1, which is a sequence that does not appear to bear any structural similarity with the amino acid sequence of SEQ ID NO:6. . . . Because the specification fails to provide guidance for the use of peptide that consists of or comprises an amino acid sequence of SEQ ID NO:6, the quantity of experimentation necessary to determine a use for a peptide of SEQ ID NO:6 would be large. Furthermore, such experimentation would involve experimentation on the peptide itself to determine whether it is a peptide that is actually expressed, to determine what biological activity is [sic] might possess or determine if it has any association with a disease state."

As explained above, Applicant isolated a cDNA that encodes a novel NEM polypeptide from prostate cancer cells and thus realized that such NEM polypeptide may be useful in the diagnosis and treatment of prostate cancer. Applicant took several samples of the plasmid from the isolated cDNA for DNA sequencing and derived four nucleotide sequences. From these nucleotide sequences, Applicant derived at least 8 amino acid sequences. See page 8, lines 8-11. Applicant found that the novel NEM cDNA Applicant had isolated and the encoded polypeptide

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may be utilized in the diagnosis of prostate cancer and in the determination of the grade of the prostate cancer; may be used to generate antibodies against NEM or its receptor to inhibit the growth and invasion of cancer; and may be used as a prophylactic or therapeutic vaccine. Thus, these disclosed properties relate to a polypeptide derived from at least one of the identified amino acid sequences. One of ordinary skill in the art would recognize that SEQ ID NO:6 possessed the disclosed utility and could be utilized in any of the disclosed assays or experiments.

CONCLUSION

Applicant submits that the claims are now in a condition for allowance, and requests early notification to that effect. If there are any additional fees due in connection with this amendment, please charge the same to our deposit account No. 13-0019. Should the Examiner have any questions, please call the undersigned.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

Claims 2, 3, and 5 have been amended as follows:

2. (Amended) [A] An isolated polypeptide [peptide encoded by the cDNA sequence according to Claim 1, the peptide having substantial homology with a peptide selected from the group consisting of Sequence ID 1, Sequence ID 6, Sequence ID 7, Sequence ID 8, Sequence ID 9, Sequence ID 10, Sequence ID 11, and Sequence ID 12] comprising an amino acid sequence of SEQ ID NO: 6.

3. (Amended) A composition comprising the [peptide] polypeptide of Claim 2, wherein the polypeptide is conjugated with at least [two members] one binding agent selected from the group consisting of a monoclonal [antibodies] antibody, single chain [antibodies] antibody, phage-display evolved [antibodies] antibody, and in-vitro evolved [antibodies] antibody [and aptamers, the at least two members bound to different epitopes of the peptide such that binding of the first member does not compromise binding of the second member].

5. (Amended) A composition for treating prostate cancer, comprising the [peptide] polypeptide of Claim 2, conjugated with a binding agent capable of inhibiting binding of the [peptide] polypeptide to its receptor, thereby inhibiting an ability of the [peptide] polypeptide to induce prostate cancer cell growth, the binding agent [being] selected from the group consisting of[:

(a) an antibody selected from the group of] monoclonal [antibodies] antibody, partially or fully humanized monoclonal [antibodies] antibody, polyclonal [antibodies] antibody, [antibodies] antibodyselected by phage display selection, single chain [antibodies] antibody, and in-vitro evolved [antibodies] antibody [capable of binding to the peptide;

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(b) a D-peptide sequence selected by mirror image phage display selection and capable of binding to the peptide;

(c) a peptidomimetic compound capable of inhibiting binding of the pepted to prostate cancer cells;

(d) an aptamer comprising DNA, RNA or other modified nucleoside analogs].